

ABSTRACT

Pixel cells are provided which employ a gate capacitor associated with the floating diffusion node to selectively increase the storage capacity of the floating diffusion node. The gate capacitor can be formed at the same time as the same process steps used to form other gates of the pixel cells. The inherent capacity of the storage node alone may be sufficient under low light conditions. Higher light conditions may result in selective activation of the gate capacitor, thus increasing the capacity of the storage node with the additional capacity provided by the gate capacitor. The invention produces high dynamic range and high output signal without charge sharing or lag output signal. Methods of forming such pixel cells can be applied in CMOS and CCD imaging devices, image pixel arrays in CMOS and CCD imaging devices, and CMOS and CCD imager systems.